Patent claims

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1. A porous composite matrix, in which the matrix is constructed from matrix formers comprising a hyaluronic acid derivative and a hydrolyzed collagen, and the matrix formers are present in a weight ratio range of hyaluronic acid derivative to hydrolyzed collagen of 30:70 to 99:1.

2. The composite matrix as claimed in claim 1, in which the matrix formers are present in a weight ratio range of hyaluronic acid derivative to hydrolyzed collagen of 60:40 to 99:1, preferably in a weight ratio of approximately 70:30.

3. A composite matrix as claimed in one of the preceding claims, in which the hydrolyzed collagen is partially and/or completely hydrolyzed.

4. A composite matrix as claimed in one of the preceding claims, in which the hydrolyzed collagen is additionally derivatized and/or crosslinked.

5. A composite matrix as claimed in one of the preceding claims, in which the hyaluronic acid derivative is a hyaluronic acid ester.

6. A composite matrix as claimed in claim 5, in which the hyaluronic acid ester is an ethyl or benzyl ester of hyaluronic acid.

7. A composite matrix as claimed in one of the preceding claims, comprising pores having an average diameter in the range of 10-1000 µm.

8. A composite matrix as claimed in claim 7, in which the pores have an average diameter in the range of 100-350 µm.

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9. A composite matrix as claimed in claim 7, in which the pores have an average diameter in the range of 350-1000 µm.

10. A composite matrix as claimed in claim 8 or 9, in which pores in the range of 10-100 µm are additionally present.

11. A composite matrix as claimed in one of the preceding claims, which has crosslinkages.

12. A composite matrix as claimed in one of the preceding claims, comprising biologically active compounds such as antibiotics, compounds for improving cell adhesion, calcium salts, inductive factors or further glycosaminoglycans and their derivatives.

13. A composite matrix as claimed in one of the preceding claims, comprising chondrocytes, mesenchymal stem and progenitor cells, osteoblasts or connective tissue cells.

14. A process for the production of a porous composite matrix as claimed in one of claims 1-13, comprising the dissolution or suspension of the hyaluronic acid derivative and the hydrolyzed collagen in a suitable first solvent, the addition of a pulverulent compound which is virtually insoluble in the first solvent, but which is soluble in a second solvent, in which the matrix formers hyaluronic acid derivative and hydrolyzed collagen are virtually insoluble, to the solution or suspension, the pulverulent compound having an average particle size distribution in the range of the desired pore size of the composite matrix to be produced, the removal of the first solvent and subsequently the dissolution of the pulverulent compound in a second solvent, in which the

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pulverulent compound dissolves and the matrix formers are virtually insoluble.

15. The process as claimed in claim 14, in which the first solvent is 1,1,1,3,3,3-hexafluoro-isopropanol.

16. The process as claimed in claim 14 or 15, in which the pulverulent compound is a water-soluble alkali metal or alkaline earth metal salt, in particular an alkali metal halide such as sodium chloride.

17. The process as claimed in one of claims 14-16, in which the second solvent is water.

18. The process as claimed in one of claims 14-17, in which the composite matrix is additionally shaped, dried and optionally sterilized.

19. The process as claimed in one of claims 14-18, in which the composite matrix is additionally optionally loaded with biologically active compounds and chondrocytes, mesenchymal stem and progenitor cells, osteoblasts or connective tissue cells.

20. The use of a composite matrix as claimed in one of claims 1-13 for the generation of differentiated tissue from chondrocytic cells or mesenchymal stem and progenitor cells, freshly removed or amplified cells being added to the composite matrix and optionally cultured under chondro-, osteo- or fibrogenic conditions.

21. The use as claimed in claim 20 for the tissue engineering of tissue types of the connective and supportive apparatus, in particular of chondral and osseous tissue.

22. The use as claimed in claim 20 for the in-vivo differentiation of the cells to tissue types of the connective and supportive apparatus, in particular to chondral and osseous tissue.

23. An implant, comprising a porous composite matrix as claimed in one of claims 1-13.

24. A process for the production of an implant as claimed in claim 23, in which a porous composite matrix as claimed in one of claims 1-13 is coated onto the implant surface.